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Development and Characteristic of Digital Library as a Library Branch

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Abstract

Digital libraries promise new societal benefits, especially for e-learning in digital or mobile times, starting with the elimination of the time and space constraints of traditional bricks-and-mortar libraries. The library and information professionals are required to acquire such knowledge and skills as the library is one of the highly IT influenced service profession. This paper gives an overview of current trends in digital library research consists of digital library characteristic, advantage, disadvantages and function. This paper also highlights on the impact of information technology on the traditional library.

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1. Introduction

In China, the library, information and computer technology research community began to track research in the digital library field from 1995, with the 62nd International Federation of Library Associations and Institutions Conference being held in Beijing in 1996. At this conference, DL became an official national technology development plan with China presenting its own DL definition, which subsequently led to future localized large-scale DL construction work ^[1]. Digital libraries put a world of information at your fingertips –

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if you could just figure out where the precise fact you want is buried in the electronic storehouse. Internet is creating new communities by changing forever the way we work together, teach and learn, talk to each other, as well as find, use, create and share information. In this sense a digital library is really a resource environment, accessible through one own computer or available through computing tools in buildings in campus.

2. Definitions of a “digital library”

Google, the most successful commercial internet search engine, entered a keyword “digital library” in the internet, and then Wikipedia and various other sources define “digital library” as a “library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible by computers.” There are many definitions of a “digital library.” Terms such as “electronic library” and “virtual library” are often used synonymously. The elements that have been identified as common to these definitions are: Digital Library is a “Collection of digital object (text, video and audio) along with method for access and retrieval, [as far as users are concerned] and also for selection, organization, and maintenance^[1]. Delving into this definition, the library is an organized body that holds collections – digital objects that have been grouped into categories, presumably for access purposes. So, a digital Library is an informal collection of information, stored in digital formats and accessible over a network, together with associated services.

The digital library is not merely equivalent to a digitized collection with information management tools. It is also a series of activities that brings together collections, services and people in support of the full life cycle of creation, dissemination, use and presentation of date, information and knowledge. The rapid development of the internet in the 1990s and its embrace by the library and information community enabled the concept of the digital libraries (DLs), as a branch of library, research on digital libraries flourished in the mid of 1990s with the advent of the Internet coupled with the need to make information open and easily accessible^[2]. A branch is a branch and must have certain properties, whether it is physical or virtual. A digital branch is a branch library, delivered digitally, on the Web. It offers much more than a traditional library website in many ways, because a digital branch has real staff, a real building, a real collection, and real community happening on and around it^[3].

Library and information centers are providing numerous types of information resources and services. Information content and services are changing with the passage of time. The global network internet has brought forth new dimension to libraries of modern digital world. In order to keep pace with the cyberspace librarians are to be furnished libraries with latest version of sophisticated technology. In this new library digital networking and communication infrastructure provides a global platform over which the people and organization devise strategies, interact, communicate, collaborate and search for information. This platform includes, a vast array of digitalizable products that is databases, news and information, books, magazines, TV and radio programming, movies, electronic games, musical CDs and software which are delivered over the digital infrastructure anytime, anywhere in the world^[4].

3. Characteristics of digital library

All conventional libraries basic functions focus on collection, organization and dissemination of information resources. Traditionally a “library is a place in which books, manuscripts, musical scores, or other literary and artistic materials are kept for use but not for sale”. In effect, it is an institution oriented towards collections and custody, where people may make use of the facilities. Whereas a digital library is an assemblage of digital computing, storage and communications machinery together with the content and software needed to reproduce, emulate and extend the services provided by conventional libraries. In other words, a digital library

is a computer-based system for acquiring, storing, organizing, searching and distributing digital materials for end user access. It is not just a collection of material in electronic form; it includes a browser interface and perhaps a virtual space and society. It requires less space and the data can be made available through communication networks to anyone anywhere, while facilitating searches with speed. The digital is not a single entity and as such is linked to the resources of many such collections^[5, 6].

Some of the features pointed out in the definitions of digital library may be listed as follows: (1) A library that served a defined community or set of communities. (2) A conglomerate of multiple entities. (3) Library that incorporate learning and access. (4) Library that provide fast and efficient access, with multiple access modes. (5) A library with a collection which are large and persist over time, well organized and managed, contain many formats and contain objects which may be otherwise unobtainable.

Digital libraries will also include digital materials that exist outside the physical and administrative bounds of any one digital library, will serve particular communities or constituencies, as traditional libraries do now, though those communities may be widely dispersed throughout the network, and will require both the skills of librarians and well as those of computer scientists to be viable^[6]. Definition of digital library involves three key components, which constitute the theoretical framework underlying digital libraries, namely^[7]: (1) people. (2) information resources. (3) technology.

4. Five laws of library science with digital library

A digital library is the infrastructure, policies and procedures, and organizational, political and economic mechanisms necessary to enable access to and preservation of digital content. In some instances a digital library may be a new entity, but in most cases it will be the electronic or digital face of a traditional library and its activities will be embedded within current and evolving service structures.

Ranganathan (1999)^[8] uses his five law to drive the classification and management of printed information. He started the classic five laws of library science as a spirit behind architecting and managing the libraries. We shall attempt to arrive at frameworks and structures that will help as build future digital information systems. The same five laws of library science may be rephrased as given below with somewhat different relative emphasis to guide us in architecting managing digital information systems of the 21st century:

- (1) Digital resources are for use.
- (2) Every user seeks digital resource.
- (3) Every digital resources needs it's user.
- (4) Save the time of the user.
- (5) Digital library is a growing organism worldwide.

5. Principles of digital library

Building a digital library is expensive and resource-intensive. Before embarking on such a venture, it is important to consider some basic principles underlying the design, implementation, and maintenance of any digital library. These principles apply not only to conversion projects in which analogy objects are converted to digital form, but to digital libraries in which the objects have always been in digital form ("born digitally") and to "mixed" digital libraries in which the objects may be of both types. The principles are, in some sense, self evident, yet it is easy to lose sight of them when under pressure to build a system, despite limited resources and time.

The purpose of a digital library is to provide coherent organization and convenient access to typically large amounts of digital information. The following 10 principles are helps to design and continued development of any digital library system^[9, 10]. They are: (1) Expect change. (2) Know your content. (3) Involve the right

people. (4) Design usable systems. (5) Ensure open access. (6) Be aware of data rights. (7) Automate whenever possible. (8) Adopt and adhere to standards. (9) Ensure quality. (10) Be concerned about persistence.

6. Functions of digital library

The rapid development of the internet in the 1990s and its embrace by the library and information community enabled the concept of the digital libraries (DLs), whose function can be defined as the collection, storage and processing of vast information and knowledge into a systemic project through digitalization and the internet, while providing convenient and highly efficient retrieval and inquiry services. To this effect, at a minimum, the core services expected of a Digital Library System include: a repository service for storing and managing digital objects; a search service to facilitate information discovery; and a user interface through which end users interact with the digital objects. The introduction of the DL has raised library modernization to a new level with over time.

Digital libraries promise new societal benefits, starting with the elimination of the time and space constraints of traditional bricks-and-mortar libraries. Unlike libraries that occupy buildings accessible only to those who walk through their doors, digital libraries reside on inter-networked data storage and computing systems that can be accessed by people located anywhere. At their full potential digital libraries will enable any citizen to access a considerable proportion of all human knowledge from any location. From an access vantage the Internet provides a preview of the possibilities.

The role of a Digital Library is essentially to collect, manage, preserve and make accessible digital objects. The following are some of the function of digital library:

- (1) To provide friendly interface to users.
- (2) To avail network facilities.
- (3) To support library functions.
- (4) To enhance advanced search, access and retrieval of information.
- (5) To improve the library operations.
- (6) To enable one to perform searches that is not practical manually.
- (7) To protect owners of information.
- (8) To preserve unique collection through digitization.

7. Advantages of digital library

Traditional libraries are limited by storage space; digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain it. As such, the cost of maintaining a digital library is much lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books. Digital libraries do away with these fees.

Digital library has certain characteristics, which make them different from traditional library. It has expansive and accurate system of searching with large volumes of text, image and audio-video resources. Digital libraries do not need physical space to build collection and it can be accessed from anywhere, any time. The user can get his/ her information on his own computer screen by using the Internet. Actually it is a network of multimedia system, which provides fingertip access.

The following are some of the major advantages of digital libraries ^[6].

No physical boundary. The user of a digital library need not to go to the library physically; people from all over the world can gain access to the same information, as long as an Internet connection is available.

Round the clock availability. People can gain access to the information at any time, night or day.

Multiple accesses. The same resources can be used at the same time by a number of users.

Structured approach. Digital libraries provide access to much richer content in a more structured manner, i.e. we can easily move from the catalog to the particular book then to a particular chapter and so on.

Information retrieval. The user is able to use any search term (word, phrase, title, name, subject) to search the entire collection. Digital libraries can provide very user friendly interfaces, giving clickable access to its resources.

Preservation and conservation. Another important issue is preservation - keeping digital information available in perpetuity. In the preservation of digital materials, the real issue is technical obsolescence. Technical obsolescence in the digital age is like the deterioration of paper in the paper age. Libraries in the pre-digital era had to worry about climate control and the de-acidification of books, but the preservation of digital information will mean constantly coming up with new technical solutions.

Space. Whereas traditional libraries are limited by storage space, digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain them. When a library has no space for extension digitization is the only solution.

Networking. A particular digital library can provide a link to any other resources of other digital libraries very easily; thus a seamlessly integrated resource sharing can be achieved.

Cost. In theory, the cost of maintaining a digital library is lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books. Although digital libraries do away with these fees, it has since been found that digital libraries can be no less expensive in their own way to operate. Digital libraries can and do incur large costs for the conversion of print materials into digital format, for the technical skills of staff to maintain them, and for the costs of maintaining online access (i.e. servers, bandwidth costs, etc.). Also, the information in a digital library must often be "migrated" every few years to the latest digital media. This process can incur very large costs in hardware and skilled personnel.

And Chore and Salwe (2010) ^[11] also give the advantages of digital library as:

- (1) Preserve the valuable documents, rare and special collections of libraries, archives and museums.
- (2) Protected information source.
- (3) Facility for the downloading and printing.
- (4) Provide faster access to the holding of libraries worldwide through automated better catalogues.
- (5) Help to locate both physical and digitized versions of scholarly articles and books through single interface.
- (6) Search optimization, simultaneous searches of the Internet make possible, preparing commercial databases and library collections.
- (7) The user can peruse them instant.
- (8) Cross references to other documents.
- (9) Making short the chain from author to user.
- (10) Save preparation/ conservation cost, space and money.
- (11) Digital technology affords multiple, simultaneous user from a single original which are not possible for materials stored in any other forms.
- (12) Full text search.

8. Disadvantages of digital library

New technology has brought many advantages for digital library, but simultaneously it also has certain disadvantage ^[4] as:

- (1) Costly affair.
- (2) Technology obsolescence (Hardware & Software).
- (3) Storage media relate.
- (4) Dominance of data creators and publishers.
- (5) Trained manpower.
- (6) User education and training.
- (7) Security against hacking & sabotage.

9. Conclusion

Information technology has changed the world and has become one important tool for retrieving information a new days. Library collections are not only limited to printed documents but also electronic resources increases by their use and therefore it is important to develop digital library. People realized the importance of digital libraries no matter what their feelings towards them were before. Innovative information knowledge collection, storage, process, transfer methodologies made possible by digital libraries will promote scientific research and development, facilitate distant-learning environment, and bring significant influence on the national economy.

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